

CLAIMS:

1. In a gas turbine engine comprising an expansion joint to allow for thermal growth, the expansion joint comprising first and second members having confronting faces defining a gap therebetween, wherein, at room temperature, the gap varies from one end of the faces to another end thereof in accordance with the temperature distribution profile of the first and second members during normal engine operation.
2. An expansion joint as defined in claim 1, wherein said confronting faces are non-parallel at room temperature.
3. An expansion joint as defined in claim 2, wherein said confronting faces are substantially parallel at operating temperatures of the gas turbine engine.
4. An expansion joint as defined in claim 1, wherein, at room temperature, said gap is wider at locations subject to higher operating temperatures during normal engine operation.
5. An expansion joint as defined in claim 4, wherein one of said first and second members is cut slantwise at one end thereof to form one of said confronting faces.
6. An expansion joint as defined in claim 1, wherein said first and second members respectively include first and second adjacent shroud segments of an annular shroud extending about an array of turbine blades, said gap being an intersegment gap.
7. In a gas turbine engine comprising an expansion joint having first and second members, the first and second members being provided with confronting faces defining a gap, which, at room temperature, varies from one end to another as a function of a temperature gradient of said members under

engine operating conditions, and wherein said gap is substantially uniform when said first and second members are subject to said engine operating conditions.

8. An expansion joint as defined in claim 7, wherein, at room temperature, said gap is wider at locations subject to higher operating temperatures during normal engine operation.

9. An expansion joint as defined in claim 7, wherein said confronting faces are non-parallel at room temperature.

10. An expansion joint as defined in claim 9, wherein said confronting faces are substantially parallel at operating temperatures of the gas turbine engine.

11. An expansion joint as defined in claim 8, wherein one of said first and second members is cut slantwise at one end thereof in order to form one of said confronting faces.

12. An expansion joint as defined in claim 7, wherein said first and second members respectively include first and second adjacent shroud segments of an annular shroud extending about an array of turbine blades, said gap being an intersegment gap.

13. In a gas turbine engine comprising an expansion joint having first and second members, the first and second members being provided with confronting faces defining a gap, the confronting faces being non-parallel at room temperature and substantially parallel under conditions of operating temperatures.

14. An expansion joint as defined in claim 13, wherein, at room temperature, said gap is wider at locations subject to higher operating temperatures during normal engine operation.

15. An expansion joint as defined in claim 13, wherein one of said first and second members is cut slantwise at one end thereof to form one of said confronting faces.

16. An expansion joint as defined in claim 1, wherein said first and second members respectively include first and second adjacent shroud segments of an annular shroud extending about an array of turbine blades, said gap being an intersegment gap.

17. An annular shroud adapted to surround an array of turbine blades of a gas turbine engine, the shroud including a plurality of segments, each pair of adjacent segments having confronting faces defining an intersegment gap therebetween, said intersegment gap, at room temperature, varying along a length thereof according to a temperature profile of the segments during normal engine operating conditions.

18. An annular shroud as defined in claim 17, wherein said confronting faces are non-parallel at room temperature.

19. An annular shroud as defined in claim 18, wherein said confronting faces are substantially parallel at operating temperatures of the gas turbine engine.

20. An annular shroud as defined in claim 17, wherein, at room temperature, said intersegment gap is wider at locations subject to higher operating temperatures during normal engine operation.

21. An annular shroud as defined in claim 17, wherein each of said segments is cut slantwise at one end thereof to form one of said confronting faces.

22. A method for controlling leakage of fluid between first and second gas turbine engine members subject to non-uniform thermal growth during engine operation, the first and second members having adjacent ends defining a gap therebetween, the adjacent ends and gap having a width, the adjacent ends in use having an operating temperature which varies across the width of the ends, the method comprising the steps of: a) determining a temperature distribution profile of the expected operating temperature along the width of the adjacent ends during engine operation, and b) configuring at least one of the adjacent ends in accordance with the temperature distribution profile obtained in step a) to thereby promote more uniform sealing between the adjacent ends during engine operation.

23. A method as defined in claim 22, wherein step b) comprises the step of machining said one end along a path corresponding to the temperature distribution profile.

24. A method as defined in claim 23, wherein said temperature distribution profile is linear, and wherein said path extends slantwise along a straight line.

25. A method as defined in claim 23, wherein said temperature distribution profile is parabolic, and wherein said path extends along a parabolic curve.

26. A component for a turbine section of a gas turbine engine, the component comprising:

an annular segment portion, the annular segment portion being made of a material which predictably expands when heated, the annular segment portion having end faces adapted to oppose corresponding end faces of adjacent annular segment portions when the annular segment portion and adjacent annular segment portions are installed on the gas turbine engine, the annular segment

portion and adjacent annular segment portions being exposed to a high operating temperature and an operating temperature differential along the end faces when the gas turbine engine is operated, the end faces of the annular segment portion being non-parallel to one another at room temperature, the end faces of the annular segment portion being adapted to become substantially parallel to one another by reason of thermal expansion when exposed to said operating temperature differential.

27. The component of claim 26 wherein the component is selected from the group of turbine shroud and turbine vane segment.

28. The component of claim 26 wherein the annular segment portion end faces are substantially planar at room temperature.